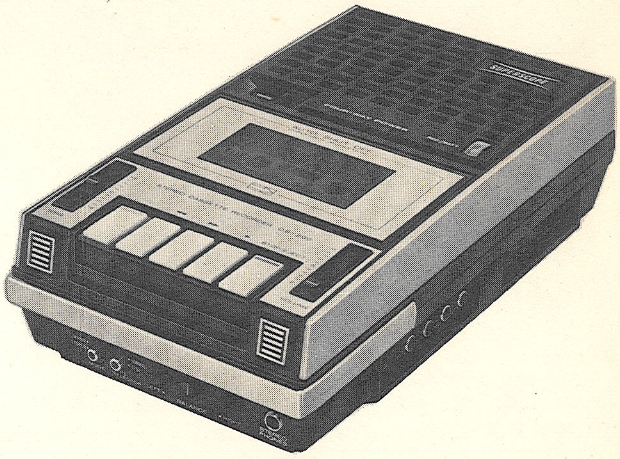
SUPERSCOPE®

STEREO
CASSETTE
RECORDER

Model CS-200
SERVICE DATA

—Apr. 1974—

SUPERSCOPE INC.
8150 VINELAND AVENUE
SUN VALLEY, CALIFORNIA·91352·U.S.A.



SPECIFICATIONS

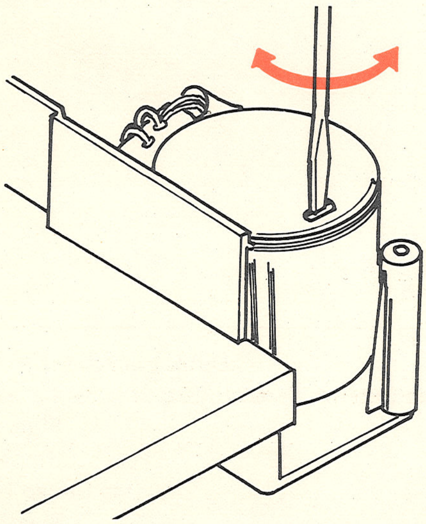
Tape Speed . . . . 4.8 cm/sec. (1-7/8 I.P.S.)
Tape . . . . PHILIPS Type Cassette or Equivalent
Recording System . . . . . . Quarter Track Stereo AC Bias
Erasing System . . . . Dual Track AC Erase
Rewind and Fast Forward Time 80 sec./C-60
Power Output . . . . 1.2 W (per channel)
Frequency Response . . . Standard Tape: 60 Hz to 10 KHz
Chromium Dioxide Tape: 60 Hz to 14 KHz
Signal to Noise Ratio . . . . Standard Tape: 52 dB
Chromium Dioxide Tape: 53 dB
Terminals. .Two Microphone Input: (one for each channel)
Plug Type: Mini
Impedance: Low
Input Sensitivity: 0.25 mV (−72 dB)
. . . . Two Auxiliary Input: (one for each channel)
Plug Type: Phono
Impedance: More than 100 KΩ
Input Sensitivity: 62 mV (−22 dB)
. . . . Two Auxiliary Output: (one for each channel)
Plug Type: Phono
Impedance: 6 KΩ
Output Level: 0.775 V (at 0 VU)
. . . . One DIN (PLAY/REC)
Plug Type: DIN
Input Impedance: 47 KΩ
Output Impedance: 6 KΩ
Input Sensitivity: 50 mV (−26 dB)
Output Level: 0.775 V (at 0 VU)
. . . Two External Speaker Output: (one for each channel)
Plug Type: Mini
Impedance: 8 Ω
. . . . One Stereo Head Phone:
Plug Type: Phono
Impedance: 8 Ω
. . . . One AC Inlet:
. . . . One Remote Control:
. . . . One External DC:
Bias Frequency . . . . 75 KHz
Type of Indication . . . . One Miniature Meter
Head Configuration . . . . Quarter Track Record/Playback,
2 Channel Stereo
Wow and Flutter . . . . 0.16% RMS
Number and Type of Motor . . . . One DC, Electrical
Governor Controlled
Number of Semi Conductors . . . . 18 Transistors
2 Field Effect Transistors
14 Diodes
Power Requirements . . UM-2 ("C" size) x 4, Rechargeable
Pack , DC 6V, AC 120V 50/60 Hz (u), (c),
AC 110/220V 50/60 Hz(e)
Dimensions . . . . Width: 154mm (6-11/64")
Height: 74mm (3-1/2")
Depth: 274mm (10-53/64")
Weight . . . . 2.6 kg (5.3 lbs) with Batteries

ADJUSTING AND MEASURING PROCEDURES

1. SPEED ADJUSTMENT

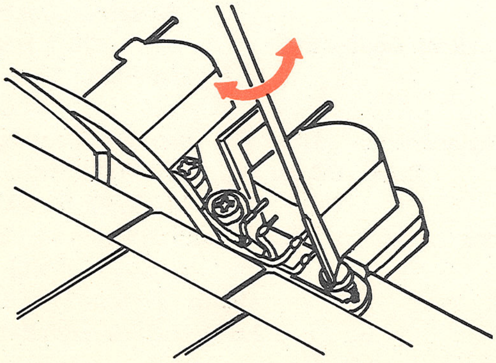
Load and run a pre-recorded test tape (3kHz), and read out and adjust its running speed with a Philip's screwdriver on the speed counter for 2,990 to 3,010Hz in the output frequency.

Note:
(1) For the speed adjustment, wait 30 seconds after having set the recorder to the PLAY position to make to tape run free from drift due to the motor.
(2) The speed adjustment and checking should be performed halfway between the beginning and end of the test tape.
(3) When adjusting the speed do not turn the semifixed resistor more than five times of reciprocation.
(4) Do not perform the speed adjustment immediately after the recorder has been moved from a warm storage place to cold place (and reversely).



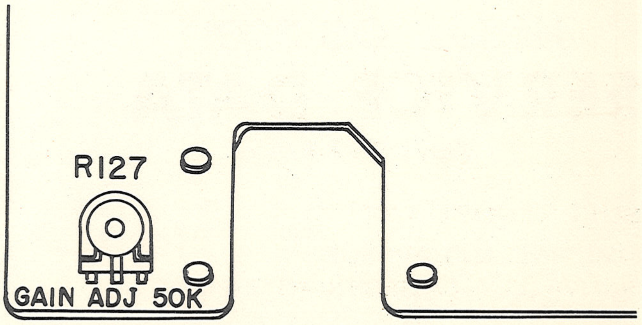
2. AZIMUTH ADJUSTMENT

Play a pre-recorded tape on which both 333Hz and 10kHz signals, or only 10kHz signals, is recorded and adjust the azimuth adjusting screws so that the output levels of both R and L channels may be maximum at the LINE OUT jack. If the R and L channels are different in the output peak level, set the azimuth adjusting screws to the mechanical peak position. After adjustment, repeat playback and stop of the tape several times, and check to assure that no azimuth deviation is found.



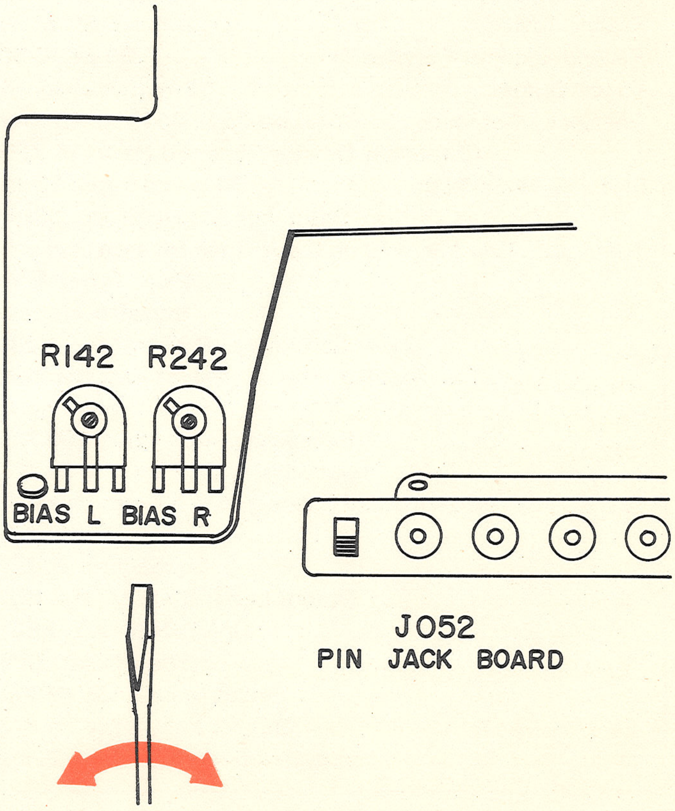
3. PLAYBACK LEVEL ADJUSTMENT

Play back a test tape on which 333Hz test signal is pre-recorded. Next, adjust R127 either clockwise or counter-clockwise so that the voltage output level at left channel LINE OUT jack becomes the same level as that of right channel. In this case both output levels should be about 0.7V.

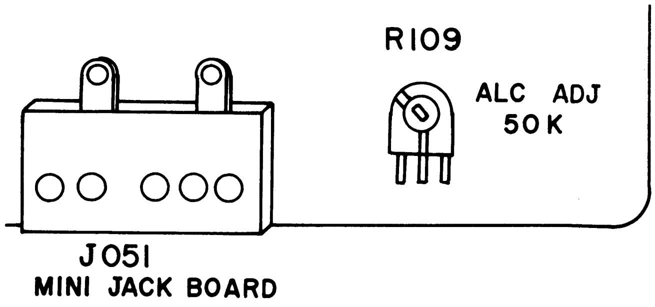


4. BIAS CURRENT ADJUSTMENT

Set the tape selector switch to the NORMAL position. Keeping the recording and forwarding push-button depressed, connect a VTVM across the resistors R101 and R201 and adjust R142 and R242 to obtain 52mV across each resistor. Counter-clockwise turning will increase the current.



5. **RECORDING LEVEL ADJUSTMENT**
Set the tape selector switch to the NORMAL position. Keeping the recording push-button depressed, apply a −50dB 1kHz signal to the microphone input, and connect a VTVM across the resistors R101 and R201, and adjust R109 to obtain even value across each resistor.



6. **PLAYBACK OUTPUT LEVEL MEASUREMENT**
Play a 333Hz, 25mM/mm pre-recorded tape and measure the playback output level using a VTVM.

7. **PLAYBACK SIGNAL-TO-NOISE RATIO MEASUREMENT**
Play a 333Hz, 25mM/mm pre-recorded tape, and read the playback output level as 0dB reference. Next, load and run a no-signal tape, and measure the output noise level.

8. **PLAYBACK FREQUENCY RESPONSE MEASUREMENT**
Play a 40Hz-to-10kHz, 25mM/mm, −10dB pre-recorded tape prepared specifically for frequency response measurement or a 333Hz-and-10kHz, 25mM/mm, −10dB pre-recorded tape. Measure the output level of the 10kHz signal in reference to that of the 333Hz output level.

9. **RECORDING-PLAYBACK OUTPUT LEVEL, DISTORTION, AND SIGNAL-TO-NOISE RATIO MEASUREMENTS**
Apply a 1kHz, −60dB signal to the microphone jack. Record the input signal on an unrecorded tape. Next, change MIC/LINE switch from MIC to LINE, and in this state perform the no-signal recording.
Playback the recorded signal, and measure its output level and distortion.
Measure the output level deviation of the no-signal recorded noise in reference to 0dB of the above recorded 1kHz signal.

10. **RECORDING-PLAYBACK FREQUENCY RESPONSE MEASUREMENT**
Apply a 1kHz, −90dB signal to the microphone jack and record on an unrecorded tape. Repeat this recording for frequencies of 60Hz, 100Hz, 10kHz, and 12kHz.
Play the above recorded signals and measure the output level deviation of each recorded signal in reference to that of the 1kHz signal.

11. **ERASE CHARACTERISTIC MEASUREMENT**
Apply a 1kHz, −40dB signal to the microphone jack and record on an unrecorded tape.
Next, rewind the tape halfway across the recorded portion. Change MIC/LINE switch from MIC to LINE, and perform the no-signal recording from the half position.
Play the recorded and erased portions through a 1kHz bandpass filter, and measure the level difference between the recorded signal and residual signal after erasing.

CAUTION: (1) **Before making any adjustment and measurement, clean the front of the heads with gauze containing alcohol or carbon tetrachloride, and fully demagnetize the heads, capstans and similar parts. After adjustment, apply a little amount of paint on the adjusted portions.**
(2) **The measurement will be performed with tone control knob placed in the "+5" position, unless otherwise noted.**
(3) **The measurement relating to power output will be made by measuring the voltage across the 8 ohm pure resistive load connected to the EXT SPK JACK through a PLUG, using a VTVM. The reference output level is 50mW (0.63V = 0dB) and this value will be set by adjusting the volume control.**

12. **POWER VOLTAGE CHANGE**
The modification of power supply voltage will be made according to the color-code shown on the power supply unit board.

SERVICING GUIDE

1. **CHECK THE BATTERY**
Confirm that the power supply voltage exceeds 4.5V when a battery is employed.

2. **POLARITY OF BATTERY**
When replacing the battery, be careful not to mistake the polarity, as the motor and the transistors may be damaged.

3. **DIRTY HEAD**
When the head-slit becomes dirty from dust and powder from the tape, the tone quality and volume will deteriorate. In the case of new sets dust, etc., collect easily, because the tape and the slit surface are not well matched. This requires close attention. Remove the dust with a soft cloth soaked in alcohol or carbon tetrachloride.

MEASUREMENT OF VOLTAGE AND CURRENT

As the output stage of this amplifier is B class push-pull the voltage to be measured will change with the varying signals.

Hence the measurement should be carried out under no signal conditions.

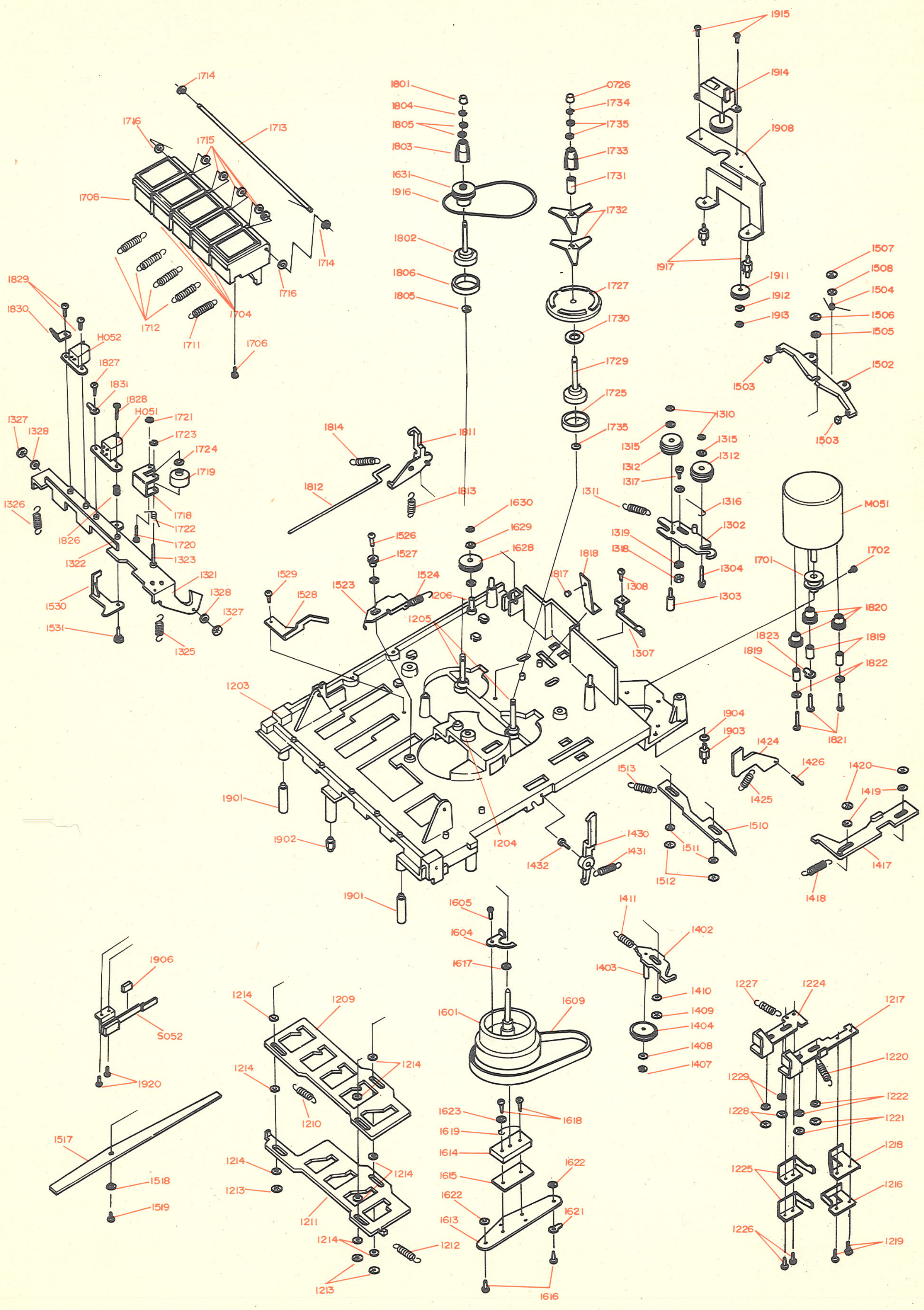
Voltage values shown the schematic diagram are standard values measured at no signal by a VTVM and should be within an error of 20%. As in a transistor circuit extremely small voltages often come into question always use a meter of high sensitivity and high internal resistance to eliminate measurement errors.

Note: Voltages shown in parentheses are for the switch in the record position.

Current Consumption

		Amplifier	Motor	Actual Value (AMP+Motor)
Playing	**No Signal**	50~70mA	80~110mA	130~180mA
	Max. Output	790~840mA	80~110mA	870~950mA
Recording		100~110mA	80~110mA	180~220mA
Rewinding		–	200~380mA	–
Fast Forward		–	200~380mA	–

EXPLODED DIAGRAM OF THE MECHANISM


1714
1716
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1706
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H052
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1831
1828
H051
1721
1723
1724
1719
1327
1328
1326
1826
1718
1722
1720
1323
1322
1321
1328
1327
1530
1531
1325
1801
1804
1805
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1631
1916
1802
1806
1805
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1524
1206
1205
1203
0726
1734
1735
1733
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1914
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1304
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1307
1818
1817
M051
1701
1702
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1431
1432
1204
1901
1902
1901
1605
1604
1617
1609
1601
1411
1402
1403
1410
1409
1404
1408
1407
1906
S052
1920
1517
1518
1519
1214
1209
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1214
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1213
1214
1211
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1213
1212
1623
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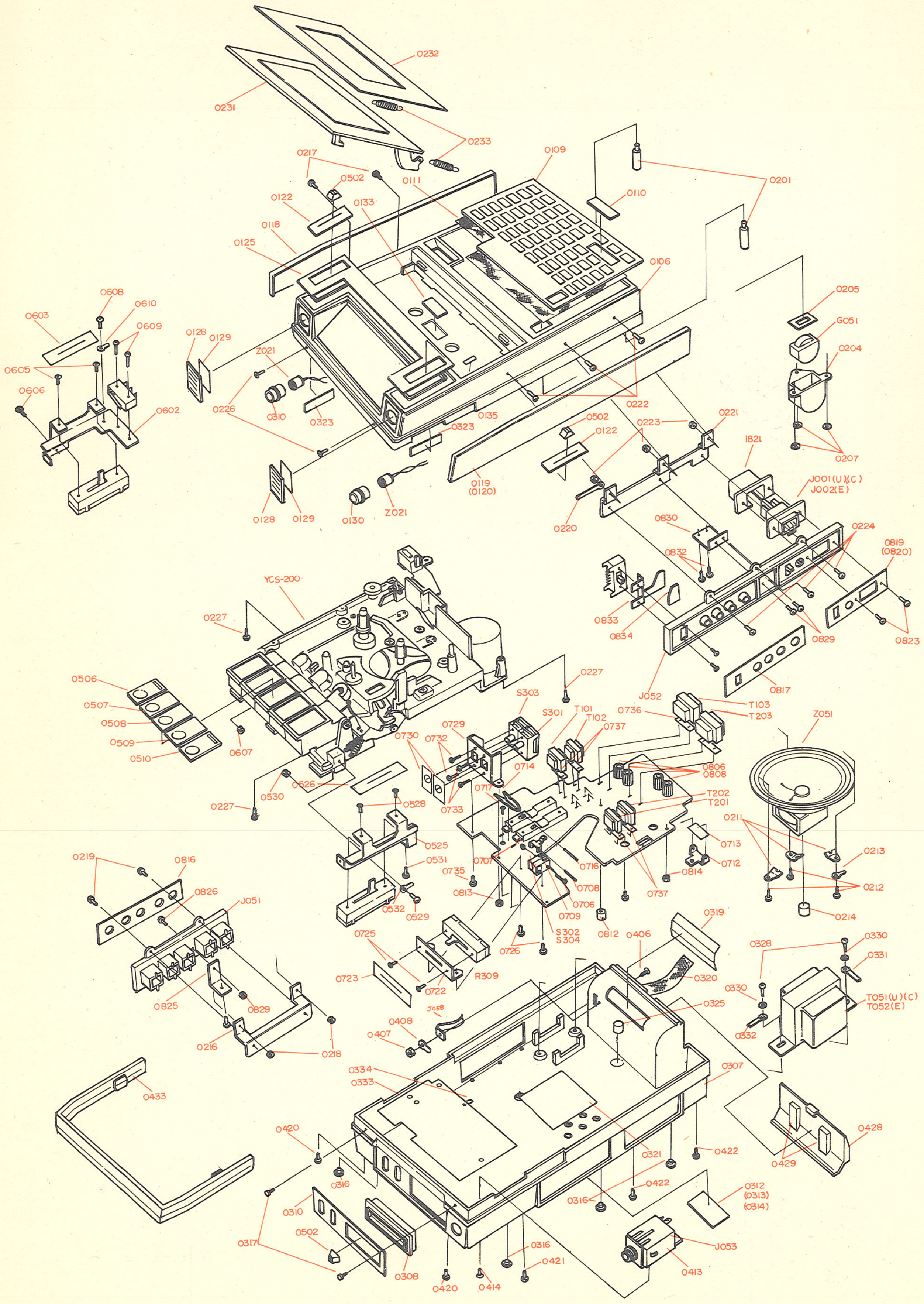
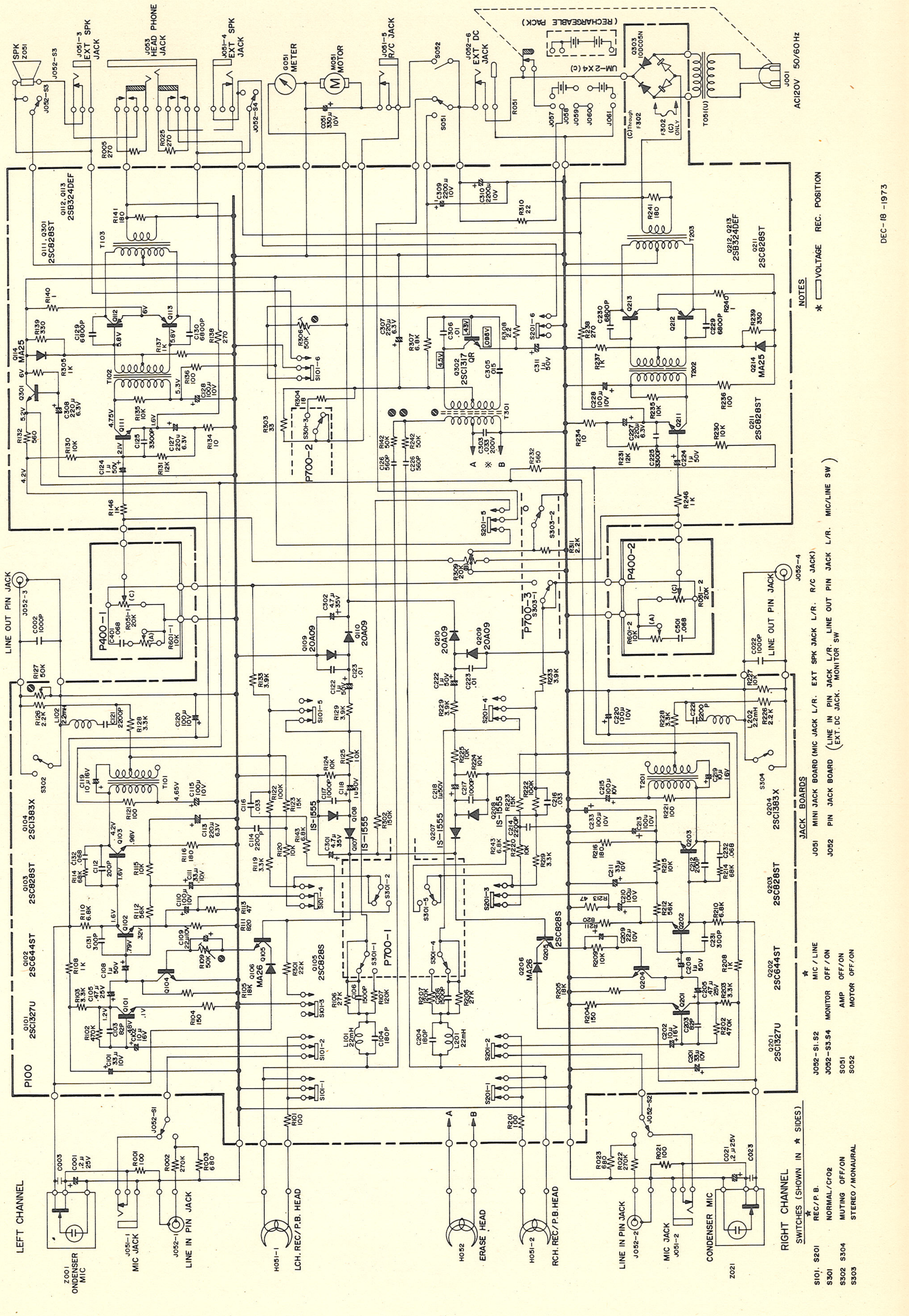
1219

EXPLODED DIAGRAM OF THE CABINET


0232
0231
0233
0217
0502
0111
0109
0201
0122
0133
0110
0118
0125
0106
0205
G051
0204
0603
0608
0610
0609
0605
0606
0602
0128
0129
Z021
0226
0310
0323
0222
0135
0323
0502
0122
0223
0221
1821
0207
J001(U)(C)
J002(E)
0128
0129
0130
Z021
0119
(0120)
0220
0830
0224
0819
(0820)
0832
0833
0834
0829
0823
J052
0817
YCS-200
0227
0227
0227
0506
0507
0508
0509
0510
0607
0530
0526
0528
S303
S301
T101
T102
0737
0736
T103
T203
Z051
0729
0730
0732
0714
0733
0717
0806
0808
T202
T201
0211
0213
0212
0214
0713
0712
0814
0737
0525
0531
0735
0707
0716
0813
0708
0706
0709
S302
S304
0812
0532
0529
0219
0816
0826
J051
0825
0829
0216
0218
0725
0723
0722
R309
J058
0726
0406
0319
0320
0325
0328
0330
0331
0330
0332
T051(U)(C)
T052(E)
0408
0407
0334
0333
0307
0433
0420
0316
0310
0502
0317
0308
0420
0414
0316
0421
0321
0422
0422
0316
0312
(0313)
(0314)
0428
0429
J053
0413

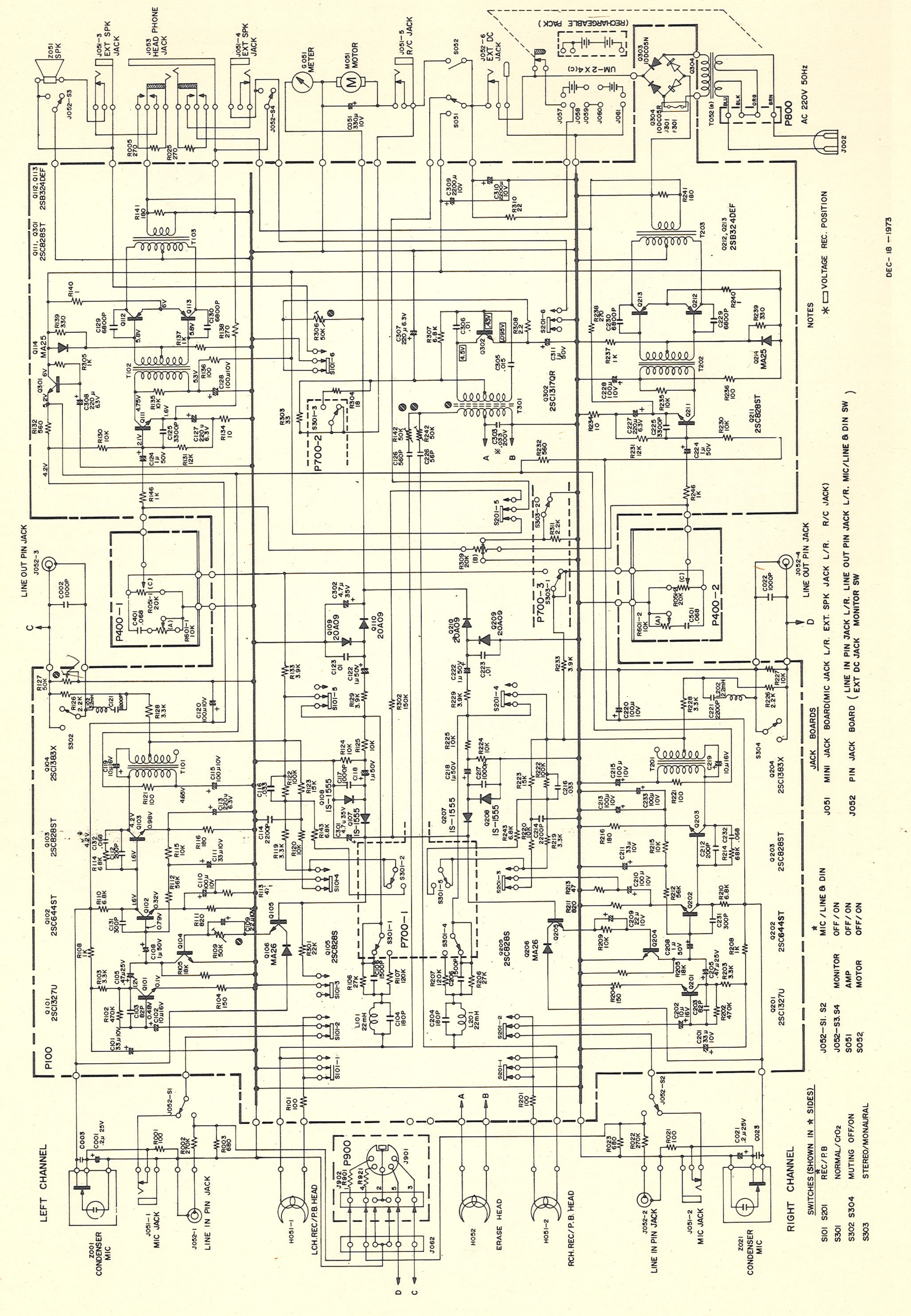
SCHEMATIC DIAGRAM (U.S.A., CANADA)

SCHEMTIC DIAGRAM OF CS-200 (u) (c)

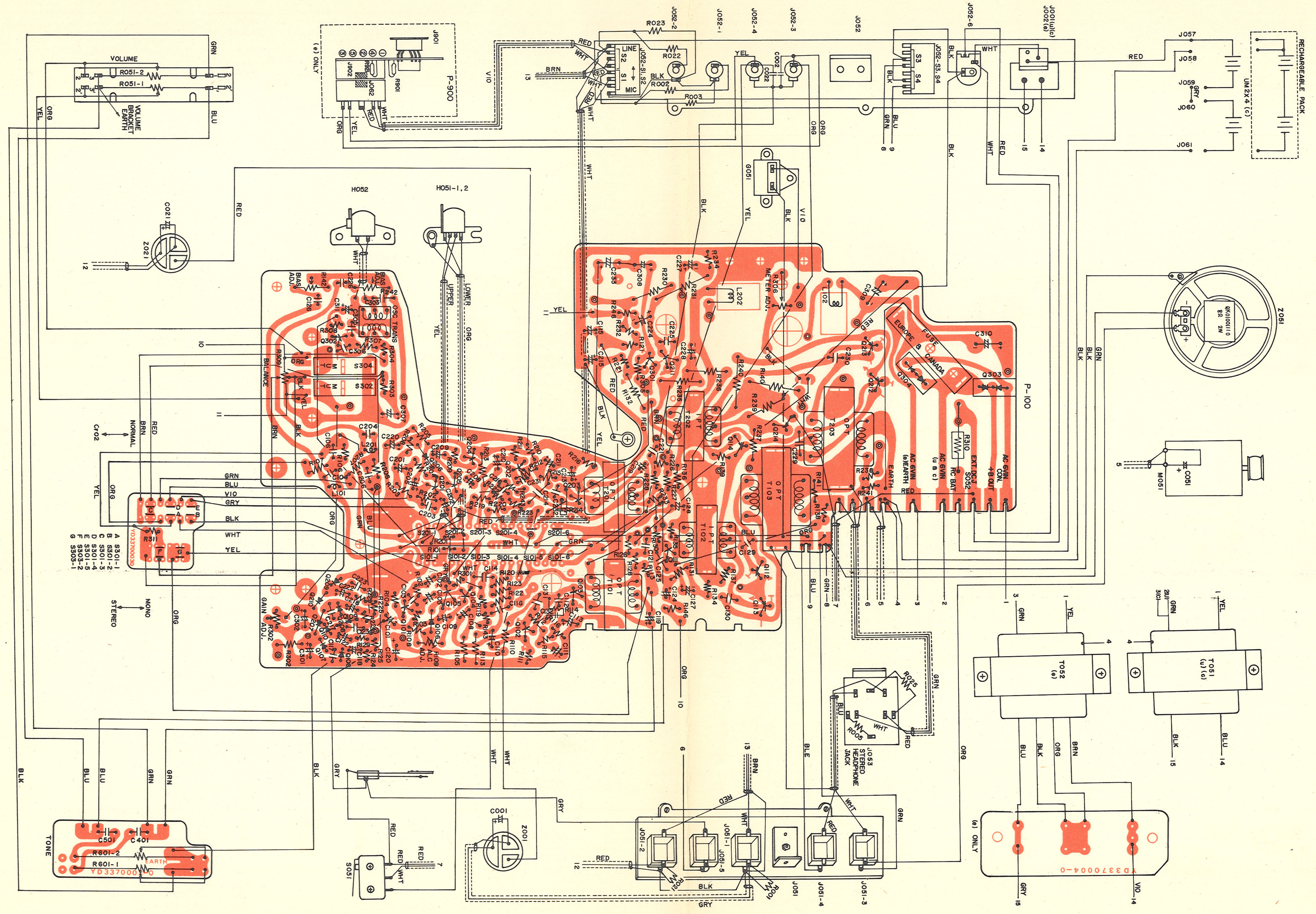

LEFT CHANNEL
RIGHT CHANNEL
LINE OUT PIN JACK
SPK
HEAD PHONE JACK
EXT SPK JACK
METER
MOTOR
R/C JACK
EXT DC JACK
(RECHARGEABLE PACK)
AC120V 50/60Hz
ERASE HEAD
LCH. REC/P.B. HEAD
RCH. REC/P.B. HEAD
LINE IN PIN JACK
MIC JACK
CONDENSER MIC
P100
P400-1
P400-2
P700-1
P700-2
P700-3
DEC-18-1973
NOTES
* □ VOLTAGE REC. POSITION
JACK BOARDS
J051 MINI JACK BOARD (MIC JACK L/R. EXT. SPK JACK L/R. R/C JACK)
J052 PIN JACK BOARD (LINE IN PIN JACK L/R. LINE OUT PIN JACK L/R. MIC/LINE SW EXT. DC JACK. MONITOR SW)
*
J052-S1. S2 MIC/LINE
J052-S3. S4 MONITOR OFF/ON
S051 AMP OFF/ON
S052 MOTOR OFF/ON
SWITCHES (SHOWN IN ★ SIDES)
S101. S201 REC/P.B.
S301 NORMAL/CrO2
S302 S304 MUTING OFF/ON
S303 STEREO/MONAURAL

SCHEMATIC DIAGRAM (EUROPE)

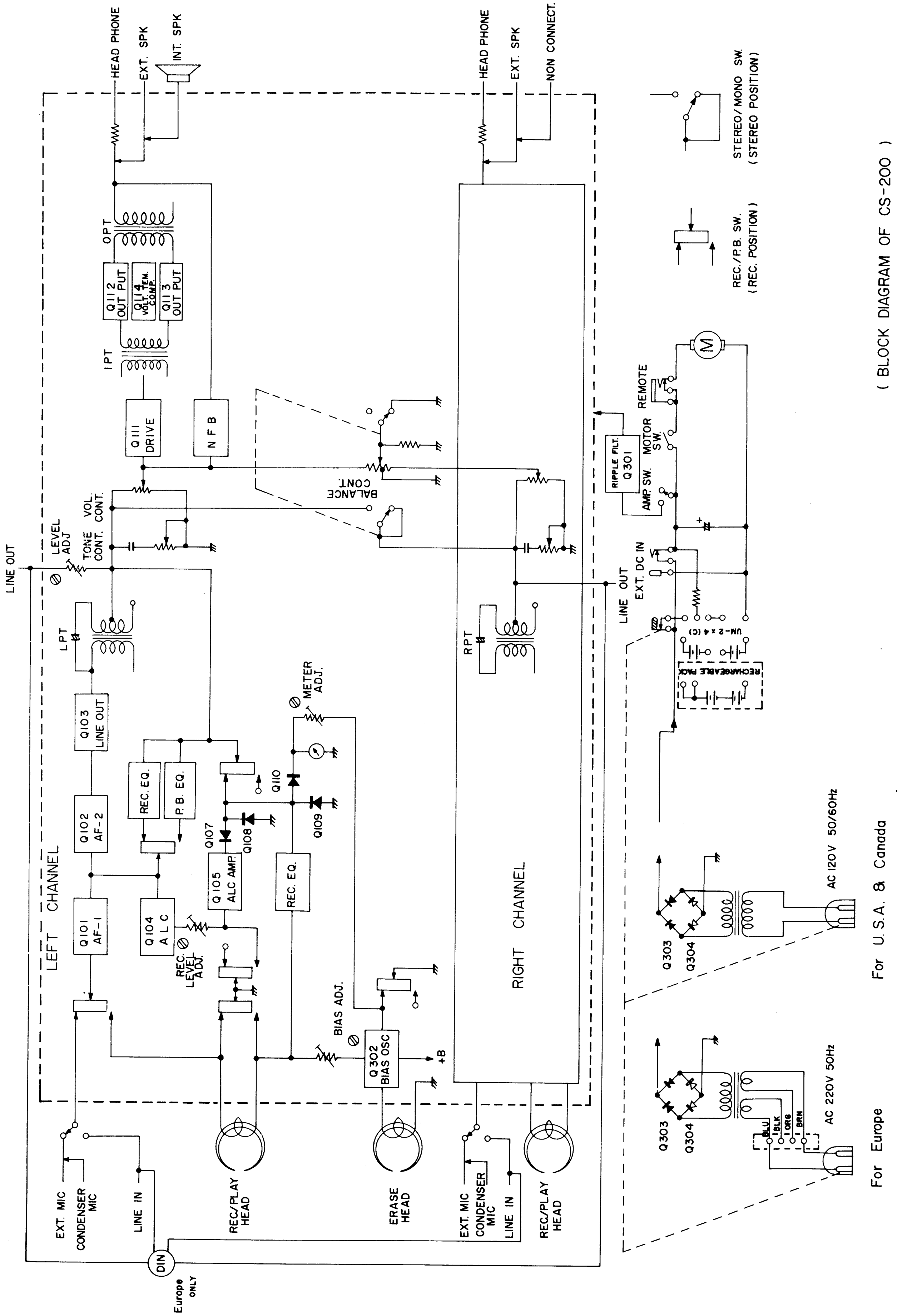
SCHEMTIC DIAGRAM OF CS-200(e)


LEFT CHANNEL
RIGHT CHANNEL
LINE OUT PIN JACK
SPK
HEAD PHONE JACK
EXT SPK JACK
METER
MOTOR
R/C JACK
EXT DC JACK
(RECHARGEABLE PACK)
AC 220V 50Hz
P800
P900
ERASE HEAD
LCH. REC/P.B. HEAD
RCH. REC/P.B. HEAD
LINE IN PIN JACK
MIC JACK
CONDENSER MIC
P100
P400-1
P400-2
P700-1
P700-2
P700-3
DEC-18-1973
NOTES
* □ VOLTAGE REC. POSITION
JACK BOARDS
J051 MINI JACK BOARD (MIC JACK L/R. EXT. SPK JACK L/R. R/C JACK)
J052 PIN JACK BOARD (LINE IN PIN JACK L/R. LINE OUT PIN JACK L/R. MIC/LINE & DIN SW EXT. DC JACK MONITOR SW)
*
J052-S1. S2 MIC/LINE & DIN
J052-S3. S4 MONITOR OFF/ON
S051 AMP OFF/ON
S052 MOTOR OFF/ON
SWITCHES (SHOWN IN ★ SIDES)
S101 S201 REC/P.B
S301 NORMAL/CrO2
S302 S304 MUTING OFF/ON
S303 STEREO/MONAURAL

CIRCUIT BOARD DIAGRAM


VOLUME
R051-2
R051-1
VOLUME BRACKET EARTH
J901
P-900
J902
R901
J062
(e) ONLY
R023
R022
R002
R003
LINE
MIC
S1
S2
S3
S4
J052-1
J052-2
J052-3
J052-4
J052-6
J052
J001(a)(c)
J002(e)
J057
J058
J059
J060
J061
RECHARGEABLE PACK
UM2X4 (c)
G051
H052
H051-1,2
UPPER
LOWER
C021
Z021
BIAS ADJ.
OSC TRANS
S304
S302
BALANCE
METER ADJ.
L202
EUROPE & CANADA
FUSE
Q303
Q304
P-100
AC 6VIN CON.
+B OUT
EXT DC-V
S052
RC BAT
AC 6VIN (a b c)
AC 6VIN (e)EARTH
EARTH
T203
T202
T201
T103
T102
T101
O.P.T
I.P.T
GAIN ADJ.
NORMAL
CrO2
STEREO
MONO
A S301-1
B S301-2
C S301-3
D S301-4
E S301-5
F S303-2
G S303-1
R311
YD33700030
Z051
QK010011 0 8Ω 2W
M051
C051
T052 (e)
T051 (a) (c)
R025
R005
J053 STEREO HEADPHONE JACK
J051-1
J051-2
J051-3
J051-4
J051-5
J051
R004
R001
C001
Z001
S051
TONE
C501
C401
R601-2
R601-1
EARTH
YD33700020
(e) ONLY
YD33700040
RED
WHT
BLK
BRN
YEL
ORG
GRN
BLU
VIO
GRY

BLOCK DIAGRAM


HEAD PHONE
EXT. SPK
INT. SPK
HEAD PHONE
EXT. SPK
NON CONNECT.
OPT
Q112 OUT PUT
Q114 VOL. TEM. COMP.
Q113 OUT PUT
IPT
Q111 DRIVE
N F B
BALANCE CONT.
VOL CONT.
TONE CONT.
LEVEL ADJ
LINE OUT
LPT
Q103 LINE OUT
Q102 AF-2
Q101 AF-1
REC. EQ.
P.B. EQ.
Q104 A L C
Q105 ALC AMP
Q107
Q108
Q109
Q110
METER ADJ.
REC. EQ.
REC. LEVEL ADJ.
BIAS ADJ.
Q302 BIAS OSC
+B
LEFT CHANNEL
RIGHT CHANNEL
RPT
EXT. MIC
CONDENSER MIC
LINE IN
REC/PLAY HEAD
ERASE HEAD
EXT. MIC
CONDENSER MIC
LINE IN
REC/PLAY HEAD
DIN
Europe ONLY
STEREO/MONO SW. (STEREO POSITION)
REC./P.B. SW. (REC. POSITION)
M
REMOTE
MOTOR SW.
RIPPLE FILT. Q301
AMP. SW.
EXT. DC IN
LINE OUT
UM-2 x 4 (C)
RECHARGEABLE PACK
Q303
Q304
AC 120V 50/60Hz
For U.S.A. & Canada
Q303
Q304
BLU
BLK
ORG
BRN
AC 220V 50Hz
For Europe

(BLOCK DIAGRAM OF CS-200)

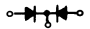
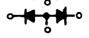
REPLACEMENT PARTS

REF. DESIG.	PARTS NO.	DESCRIPTION
*	337006440	Cabinet Case Assembly For U.S.A. incl. A, B, C
*	337006441	Cabinet Case Assembly For CANADA incl. A, B1, C
*	337006442	Cabinet Case Assembly For EUROPE incl. A1, B2, C
A	337006443	Case Assembly For U.S.A. & CANADA
A1	337006444	Case Assembly For EUROPE
0106	333206430	Case
0109	333206330	Escutcheon
0110	287625102	Badge
0111	333220201	Net
0118	333206304	Escutcheon
0119	333206305	Escutcheon For U.S.A. & CANADA
0120	333206303	Escutcheon For EUROPE
0122	337006301	Escutcheon x 2
0125	337026501	Indicator
0128	337006302	Escutcheon x 2
0129	334630303	Mask x 2
0133	334727401	Retrector
0135	337010707	Sheet x 2
0208	51042608A	F.H.M. Screw x 2 For EUROPE
0217	51042608A	F.H.M. Screw x 2
0222	51042608A	F.H.M. Screw x 3
B	337025740	Bottom Lid Assembly For U.S.A.
B1	337025741	Bottom Lid Assembly For CANADA
B2	337025742	Bottom Lid Assembly For EUROPE
0307	333225730	Lid
0308	337040130	Frame
0310	337026502	Indicator
0312	337026503	Indicator For U.S.A.
0313	337026504	Indicator For CANADA
0314	337026505	Indicator For EUROPE
0316	285805701	Leg x 4
0317	337011802	Spacer x 2
0319	337010730	Sheet
0320	337000701	Strip
0321	333220202	Net
0323	337010705	Sheet x 2
0333	337010930	Shield
0334	57219520E	Lug Eyelet
C	333225740	Lid Assembly (Batt.)
0428	333225731	Lid
0429	73073515C	Buffer
D	333225741	Cassette Lid Assembly
0231	333225732	Lid
0232	333206306	Escutcheon
E	337027044	Button Assembly (Stop)
0506	337006330	Escutcheon
1704	333227001	Button
F	337027045	Button Assembly (Play)
0507	337006331	Escutcheon
1704	333227030	Button
1706	340225401	Pin
G	337027046	Button Assembly (F.F.)
0508	337006332	Escutcheon
1704	333227001	Button
H	337027046	Button Assembly (Rew.)
0509	337006332	Escutcheon
1704	333227030	Button
I	337027047	Button Assembly (Rec.)
0510	337006333	Escutcheon
1708	333227031	Button
J	340210540	Chassis Assembly
1203	329510530	Chassis
1204	336710602	Bearing
1205	329511202	Shaft x 2
1206	340211201	Shaft
K	329535440	Lever Assembly (F.F./Rew. Idler)
1302	329535401	Lever
1303	329511204	Shaft
L	333216040	Bracket Assembly
1321	333216030	Bracket
1322	329525901	Bush
1323	329511201	Shaft
M	329500240	Arm Assembly
1402	329500202	Arm
1403	329511205	Shaft
N	329535441	Lever Assembly
1502	329535433	Lever
1503	329526301	Brake x 2
O	334700440	Table Assembly (Take-up)
1725	334735301	Ring
1727	329500402	Table
1729	334700430	Table
1730	185206101	Clatch
1731	329505501	Collar
1732	321511509	Spring
1733	321506701	Cap
P	334700441	Table Assembly (Rew.)
1802	334700430	Table
1803	321506701	Cap
1806	334735301	Ring

REF. DESIG.	PARTS NO.	DESCRIPTION
		(MECA. SECTION)
1209	334705430	Cam
1210	329511528	Spring
1211	329505430	Cam
1212	329511528	Spring
1213	64020300Q	R.G. Ring CS type x 3
1214	59350602G	Poli Washer x 9
1216	329511525	Spring
1217	329535430	Lever
1218	329511503	Spring
1219	51322606P	R.H. Tap Screw x 2
1220	329511506	Spring x 2
1221	64020300Q	R.G. Ring CS type x 2
1222	59350602G	Poli Washer x 2
1224	329535431	Lever
1225	334711502	Spring x 2
1226	51322606P	R.H. Tap Screw x 2
1227	329511507	Spring
1228	64020300Q	R.G. Ring CS type x 2
1229	59350602G	Poli Washer x 2
1230	54012600E	F. Washer S type
1304	329511207	Shaft
1307	329511502	Spring
1308	51322606P	R.H. Tap Screw
1310	64001500R	R.G. Ring E type x 2
1311	329511504	Spring
1312	329500151	Idler x 2
1315	59020402G	Poli Washer x 2
1316	329511524	Spring
1317	329511208	Shaft
1318	53112603E	Hexagon Nut Hexagon Nut
1319	54042602N	Spring Washer
1325	329511504	Spring
1326	329511519	Spring
1327	64020300Q	R.G. Ring CS type x 2
1328	59046502G	Poli Washer x 2
1404	329500150	Idler K
1407	64001500R	R.G. Ring E type
1408	59020402G	Poli Washer
1409	64020300Q	R.G. Ring CS type
1410	59350602G	Poli Washer
1411	329511510	Spring
1417	329535432	Lever
1418	329511504	Spring
1419	59350602G	Poli Washer x 2
1420	64020300Q	R.G. Ring CS type x 2
1424	329500203	Arm
1425	329511512	Spring
1426	329525401	Pin
1430	329500230	Arm
1431	329511518	Spring
1432	329525402	Pin
1504	329511513	Spring
1505	59350602G	Poli Washer x 2
1506	64020300Q	R.G. Ring CS type
1507	64020300Q	R.G. Ring CS type
1508	186111806	Spacer
1510	329500231	Arm
1511	59350602G	Poli Washer x 2
1512	64020300Q	R.G. Ring CS type x 2
1513	329511514	Spring

REF. DESIG.	PARTS NO.	DESCRIPTION
1517	331235430	Lever
1518	331205502	Collar
1519	51320310P	R.H. Tap Screw
1523	329535404	Lever
1524	334711501	Spring
1526	51400208P	B.H. Tap Screw
1527	334705501	Collar
1528	332016030	Bracket
1529	51380306P	P.H.T. Screw
1530	329500204	Arm
1531	333211202	Shaft
1601	336727350	Fly Wheel K
1604	326125801	Hook
1605	51040204E	F.H.M. Screw
1609	329526401	Belt
1613	329510401	Retainer
1614	336710601	Bearing
1615	141511801	Spacer
1616	51400310P	B.H.Tap Screw x 2
1617	307711801	Spacer
1618	51102605E	B.H.M. Screw x 2
1619	329511526	Spring
1621	62031650W	Lug
1622	59110269E	Washer x 2
1623	54012600E	Washer x 2
1628	333226201	Pulley
1629	59020402G	Poli Washer x 2
1630	64001500R	R.G. Ring E type
1631	333226202	Pulley
1701	336726201	Pulley
1702	51071079G	C.H.M. Screw
1711	329511528	Spring
1712	329511516	Spring x 4
1713	329511206	Shaft
1714	64000300R	R.G. Ring E type x 2
1715	186111804	Spacer x 5
1716	186111806	Spacer x 2
1718	329535408	Arm
1719	186125501	Pinch Rollar
1720	182311209	Shaft
1721	64001500R	R.G. Ring E type
1722	329511517	Spring
1723	64001500R	R.G. Ring E type
1724	59010219E	Washer x 2
1726	329506701	Cap
1734	64001500R	R.G. Ring E type
1735	59020402G	Poli Washer
1801	329506701	Cap
1804	64001500R	R.G. Ring E type
1805	59020402G	Poli Washer x 3
1811	329535434	Lever
1812	329535701	Rod
1813	329511516	Spring
1814	329511504	Spring
1817	331205603	Buffer
1818	329500501	Clamper
1819	329505503	Collar x 3
1820	329525902	Bush x 3
1821	51102610E	B.H.M. Screw x 3
1822	54022601E	Washer x 2

REF. DESIG.	PARTS NO.	DESCRIPTION
1823	62261240W	Lug
1826	329511527	Spring
1827	51400208P	B.H. Tap Screw
1828	304825402	Pin
1829	51400210P	B.H. Tap Screw x 2
1830	112600501	Clamper
1831	62021030W	Lug
1901	337010101	Support x 2
1902	337010102	Support
1903	337010103	Support
1904	54010300E	F Washer S type
1906	304805602	Buffer
1908	337016050	Bracket K
1911	333226201	Pulley
1912	59020402G	Poly Wahser x 2
1913	64001500R	R.G. Ring E type
1914	304805230	Counter
1915	51060204A	P.H.M. Screw x 2
1916	333226401	Belt
1917	337010102	Support x 2
1920	51322606P	R.H. Tap Screw x 2
H051	LH4277101	Rec. Play Head
H052	LH3100028	Erase Head
M051	MM1060029	DC Motor
W001	YW3402001	Wiring Material
S052	SM0101029	Mini Switch
W002	YX3402001	Wiring Material
C051	EA3370109	Electroly Cap 330μ, 10V
0726	51060304A	P.H.M. Screw x 2
0735	51060304A	P.H.M. Screw
0832	51062605A	P.H.M. Screw x 2
0712	337016007	Bracket
0713	337012030	Insulator
0714	337011502	Spring
0716	63020325Q	Spring Pin
0717	51062605A	P.H.M. Screw
0736	337012032	Insulator
0737	337012033	Insulator x 4
0806	337026701	Heat Sink x 2
0808	337026701	Heat Sink x 2
0801	51062608A	P.H.M. Screw For EUROPE
0802	53112603E	Hexagon Nut For EUROPE
0803	337012002	Insulator For EUROPE
0536	59030805P	Washer For EUROPE
P100	YD3370001	P.W. Board AMP.
	ZZ3370001	P.W. Board Assembly
		SEMICONDUCTORS
Q101	HT313271U	Transistor, 2SC1327 (U)
Q201	HT313271U	Transistor, 2SC1327 (U)
Q102	HT306442A	Transistor, 2SC644 (S,T)
Q202	HT306442A	Transistor, 2SC644 (S, T)
Q103	HT308282B	Transistor, 2SC828 (S, T)
Q203	HT308282B	Transistor, 2SC828 (S, T)
Q104	HT313831X	Transistor, 2SC1383 (X)
Q204	HT313831X	Transistor, 2SC1383 (X)
Q105	HT308281D	Transistor, 2SC828 (S)
Q205	HT308281D	Transistor, 2SC828 (S)

REF. DESIG.	PARTS NO.	DESCRIPTION
Q106	HV0000202	Varistor, MA-26
Q206	HV0000202	Varistor, MA-26
Q107	HD2001105	Diode, IS-1555
Q207	HD2001105	Diode, IS-1555
Q108	HD2001105	Diode, IS-1555
Q208	HD2001105	Diode, IS-1555
Q109	HD1000302	Diode, 20A90M
Q209	HD1000302	Diode, 20A90M
Q110	HD1000302	Diode, 20A90M
Q210	HD1000302	Diode, 20A90M
Q111	HT308282B	Transistor, 2SC828 (S, T)
Q211	HT308282B	Transistor, 2SC828 (S, T)
Q112	HT203243A	Transistor, 2SB324 (D,E,F)
Q212	HT203243A	Transistor, 2SB324 (D,E,F)
Q113	HT203243A	Transistor, 2SB324 (D,E,F)
Q213	HT203243A	Transistor, 2SB324 (D,E,F)
Q114	HV0000502	Varistor, MA25
Q214	HV0000502	Varistor, MA25
Q301	HT308282B	Transistor, 2SC828 (S, T)
Q302	HT313172A	Transistor, 2SC1317 (Q,R)
Q303	HD2000710	Diode, 10DC05N 
Q304	HD2000610	Diode, 10DC05R 
		COILS & TRANSFORMERS
L101	LC2226001	Choke Coil 22mH
L201	LC2226001	Choke Coil 22mH
L102	LC2225003	Choke Coil 2.2mH
L202	LC2225003	Choke Coil 2.2mH
T101	TO1190702	Out Put Transf.
T201	TO1190702	Out Put Transf.
T102	TI1190701	In Put Transf.
T202	TI1190701	In Put Transf.
T103	TO1280811	Out Put Transf.
T203	TO1280811	Out Put Transf.
T301	TC1018006	Osc Transf.
		RESISTORS (All resistors are ±5% and ¼W, unless otherwise indicated.)
R101	GD0510114	100Ω
R201	GD0510114	100Ω
R102	RN0547414	470KΩ Noiseless
R202	RN0547414	470KΩ Noiseless
R103	RN0533214	3.3KΩ Noiseless
R203	RN0533214	3.3KΩ Noiseless
R104	RT0515114	150Ω
R204	RT0515114	150Ω
R105	RT0518314	18KΩ
R205	RT0518314	18KΩ
R106	RT0527314	27KΩ
R206	RT0527314	27KΩ
R107	RT0512414	120KΩ
R207	RT0512414	120KΩ
R108	RT0510214	1KΩ
R208	RT0510214	1KΩ
R109	RA0503001	Triming, 50K
R209	RT0510314	10KΩ
R110	RT0568214	6.8KΩ
R210	RT0568214	6.8KΩ
R111	RT0582114	820Ω
R211	RT0582114	820Ω
R112	RT0556314	56KΩ

REF. DESIG.	PARTS NO.	DESCRIPTION
R212	RT0556314	56KΩ
R113	RT0547014	47Ω
R213	RT0547014	47Ω
R114	RT0568314	68KΩ
R214	RT0568314	68KΩ
R115	RT0510314	10KΩ
R215	RT0510314	10KΩ
R116	RT0518114	180Ω
R216	RT0518114	180Ω
R119	RT0533214	3.3KΩ
R219	RT0533214	3.3KΩ
R120	RT0510314	10KΩ
R220	RT0510314	10KΩ
R121	RT0510114	100Ω
R221	RT0510114	100Ω
R122	RT0510414	100KΩ
R222	RT0510414	100KΩ
R123	RT0515314	15KΩ
R223	RT0515314	15KΩ
R124	RT0510314	10KΩ
R224	RT0510314	10KΩ
R125	RT0510314	10KΩ
R225	RT0510314	10KΩ
R126	RT0522214	2.2KΩ
R226	RT0522214	2.2KΩ
R127	RA0503016	Triming, 50KΩ
R227	RT0510314	10KΩ
R128	RT0533214	3.3KΩ
R228	RT0533214	3.3KΩ
R129	RT0539214	3.9KΩ
R229	RT0539214	3.9KΩ
R130	RT0510314	10KΩ
R230	RT0510314	10KΩ
R131	RT0512314	12KΩ
R231	RT0512314	12KΩ
R132	RT0556114	560Ω
R232	RT0556114	560Ω
R133	RT0539214	3.9KΩ
R233	RT0539214	3.9KΩ
R134	RT0510014	10Ω
R234	RT0510014	10Ω
R135	RT0510314	10KΩ
R235	RT0510314	10KΩ
R136	RT0510114	100Ω
R236	RT0510114	100Ω
R137	RT0510214	1KΩ
R237	RT0510214	1KΩ
R138	RT0527114	270Ω
R238	RT0527114	270Ω
R139	RT0533114	330Ω
R239	RT0533114	330Ω
R140	GJ0501001	1Ω ±5% 1W
R240	GJ0501001	1Ω ±5% 1W
R141	RT0518114	180Ω
R241	RT0518114	180Ω
R142	RA0503015	Triming, 50KΩ
R242	RA0503015	Triming, 50KΩ
R143	RT0568214	6.8KΩ
R243	RT0568214	6.8KΩ
R146	RT0510214	1KΩ

REF. DESIG.	PARTS NO.	DESCRIPTION
R246	RT0510214	1KΩ
R301	RT0522314	22KΩ
R302	RT0515414	150KΩ
R303	RT0533014	33Ω
R304	RT0518014	18Ω
R305	RT0510214	1KΩ
R306	RA0503009	Triming, 50KΩ
R307	RT0568214	6.8KΩ
R308	RT0502214	2.2Ω
R310	GJ0522001	22Ω±5% 1W
		CAPACITORS
C101	EA3360109	Electroly, 33μF, 10V
C201	EA3360109	Electroly, 33μF, 10V
C102	EA1060169	Electroly, 10μF, 16V
C202	EA1060169	Electroly, 10μF 16V
C103	DD1582001	Ceramic, 82pF, ±5%
C203	DD1582001	Ceramic, 82pF, ±5%
C104	DF6618150	Film, 180pF, ±10% 125V
C204	DF6618150	Film, 180pF, ±10% 125V
C105	EM4740251	Electroly, 0.47μF, 25V
C205	EM4740251	Electroly, 0.47μF, 25V
C106	DF1615201	Film, 1500pF, ±10%
C206	DF1615201	Film, 1500pF, ±10%
C108	EA1050509	Electroly, 1μF, 50V
C208	EA1050509	Electroly, 1μF, 50V
C109	EA2260109	Electroly, 22μF, 10V
C209	EA2260109	Electroly, 22μF, 10V
C110	EA1070109	Electroly, 100μF, 10V
C210	EA1070109	Electroly, 100μF, 10V
C111	EA3360109	Electroly, 33μF, 10V
C211	EA3360109	Electroly, 33μF, 10V
C112	DD1620101	Ceramic, 200pF, ±10%
C212	DD1620101	Ceramic, 200pF, ±10%
C113	EA2270069	Electroly, 220μF, 6V
C213	EA1070109	Electroly, 100μF, 10V
C114	DF1622201	Film, 2200pF, ±10%
C214	DF1622201	Film, 2200pF, ±10%
C115	EA1070109	Electroly, 100μF, 10V
C215	EA1070109	Electroly, 100μF, 10V
C116	DF1633301	Film, 0.033μF, ±10%
C216	DF1633301	Film, 0.033μF, ±10%
C117	DK1810201	Ceramic, 1000pF, $\pm^{100}_{0}\%$
C217	DK1810201	Ceramic, 1000pF, $\pm^{100}_{0}\%$
C118	EA1050509	Electroly, 1μF, 50V
C218	EA1050509	Electroly, 1μF, 50V
C119	EA1060169	Electroly, 10μF, 16V
C219	EA1060169	Electroly, 10μF, 16V
C120	EA1070109	Electroly, 100μF, 10V
C220	EA1070109	Electroly, 100μF, 10V
C121	DF1622201	Film, 2200pF, ±10%
C221	DF1622201	Film, 2200pF, ±10%
C122	EA1050509	Electroly, 1μF, 50V
C222	EA1050509	Electroly, 1μF, 50V
C123	DK1810301	Ceramic, 0.01μF, $\pm^{100}_{0}\%$
C223	DK1810301	Ceramic, 0.01μF, $\pm^{100}_{0}\%$
C124	EA4750359	Electroly, 47μF, 35V
C224	EA4750359	Electroly, 47μF, 35V
C125	DF1733201	Film, 3300pF, ±20%
C225	DF1733201	Film, 3300pF, ±20%

REF. DESIG.	PARTS NO.	DESCRIPITON
C126	DF5656150	Film, 560pF, ±10% 125V
C226	DF5656150	Film, 560pF, ±10% 125V
C127	EA2270069	Electroly, 220μF, 6V
C227	EA2270069	Electroly, 220μF, 6V
C128	EA1070109	Electroly, 100μF, 10V
C228	EA1070109	Electroly, 100μF, 10V
C129	DF1768201	Film, 6800pF, ±20%
C229	DF1768201	Film, 6800pF, ±20%
C130	DF1768201	Film, 6800pF, ±20%
C230	DF1768201	Film, 6800pF, ±20%
C131	DD1530101	Ceramic, 300pF, ±5%
C231	DD1530101	Ceramic, 300pF, ±5%
C132	DF1668301	Film, 0.068μF, ±10%
C232	DF1668301	Film, 0.068μF, ±10%
C233	EA1070109	Electroly, 100μF, 10V
C301	EA4750359	Electroly, 4.7μF, 35V
C302	EA4750359	Electroly, 4.7μF, 35V
C303	DF1533350	Film, 0.033μF, ±5% 200V
C305	DF1615301	Film, 0.015μF, ±10%
C306	DF1610301	Film, 0.01μF, ±10%
C307	EA2270069	Electroly, 220μF, 6V
C308	EA2270069	Electroly, 220μF, 6V
C309	EA2280109	Electroly, 2200μF, 10V
C310	EA2280109	Electroly, 2200μF, 10V
C311	EA1050509	Electroly, 1μF, 50V
S101	SS0602032	Slide Switch REC/PLAY
S201	SS0602032	Slide Switch REC/PLAY
J301	YJ0800009	Fuse Holder For EUROPE
F301	FS1030090	Fuse (3A) For EUROPE
F302	FS2030001	Fuse (3A) For CANADA
J051	BY0105002	Jack Plate
0825	337016010	Bracket
0826	51042606A	F.H.M. Screw
0827	53112603E	Hexagon Nut
R001	GD0510114	Resistor 100Ω ±5% ¼W
R021	GD0510114	Resistor 100Ω ±5% ¼W
J052	BY0406003	Jack Plate
0830	337016011	Bracket
0829	51062605A	P.H.M. Screw x 2
0833	337010902	Shield
0834	337012034	Insulator
R002	RT0527414	Resistor, 270KΩ ±5% ¼W
R003	RT0568114	Resistor, 680Ω ±5% ¼W
R022	RT0527414	Resistor, 270KΩ ±5% ¼W
R023	RT0568114	Resistor, 680Ω ±5% ¼W
C002	DF1710201	Film, Cap., 1000pF, ±20%
C022	DF1710201	Film, Cap., 1000pF, ±20%
P700	YD3370003	P.W. Board Tape & Mode Select
	ZZ3370003	P.W. Board Assembly
S301	SS0602033	Slide Switch (Tape Select)
S303	SS0402024	Slide Switch (Mode Select)

REF. DESIG.	PARTS NO.	DESCRIPTION
R311	GD0522214	Resistor, 2.2KΩ
0729	337016005	Bracket
0732	51062604A	P.H.M. Screw x 2
0733	51062604A	P.H.M. Screw x 2
R309	RX0203015	Variable Resistor,20KΩB (Balance)
0722	337016006	Brakcet
0725	51040204A	F.H.M. Screw x 2
S302	SC0102006	Micro Switch Muting Switch
S304	SC0102006	Micro Switch Muting Switch
0706	51100215A	B.H.M. Screw
0707	53110203E	Nut
0708	337011202	Shaft
0709	337011505	Spring
0719	121000501	Clamper
J053	YJ0100096	Head Phone Jack
R005	RT0527114	Resistor, 270Ω ±5% ¼W
R025	RT0527114	Resistor, 270Ω ±5% ¼W
0413	337016004	Bracket
0609	51100210A	B.H.M. Screw x 2
R051	RS0203006	Variable Resistor, 20KΩC(Volume)
0525	337016002	Bracket
0528	51040204A	F.H.M. Screw x 2
P400	YD3370002	P.W. Board Tone Vol.
	ZZ3370002	P.W. Board Assembly
R601	RS0103007	Variable Resistor, 10KA (Tone)
C401	DF1768301	Film, 0.068μF ±20%
C501	DF1768301	Film, 0.068μF ±20%
0602	337016003	Bracket
0605	51040204A	F.H.M. Screw x 2
S051	SC0102010	Micro Switch (AMP Circuit)
0532	62031340W	Lug
0610	62031340W	Lug
W007	YW3370003	Wire Materials For U.S.A. & CANADA
W002	YW3370002	Wire Materials For EUROPE
W003	YX3370001	Wire Materials For U.S.A. & CANADA
W004	YX3370002	Wire Materials For EUROPE
W008	YW3370102	Wire Materials
W006	YX3370101	Wire Materials
0113	64020300Q	RG Ring CS Type x 8
0130	337027101	Holder x 2
0201	337010104	Support x 2

REF. DESIG.	PARTS NO.	DESCRIPTION
0207	640202000	RG Ring CS Type x 3
0209	54042602A	Spring Washer For EUROPE
0210	53112603E	Nut For EUROPE
0211	116900501	Clamper x 3
0212	51380306P	P.H.T. Screw x 3
0216	337016008	Bracket
0218	53112603E	Hexagon Nut x 2
0221	337016009	Bracket
0223	53112603E	Hexagon Nut x 3
0233	337011504	Spring x 2
G051	IM1101406	Meter
0204	337027102	Holder
0205	337010701	Sheet
Z001	MP5000008	Internal MIC
Z021	MP5000008	Internal MIC
C001	EM2240251	Electroly, 0 22μ, 25V
C021	EM2240251	Electroly, 0.22μ, 25V
Z051	QK0100111	Speaker 10cm
0214	337005601	Buffer
0220	138200503	Clamper
0213	62031650W	Lug
C003	DF1733201	Film, 3300PF, ±20%
C023	DF1733201	Film, 3300PF, ±20%
P900	YD3370005	P.W.Board DIN Jack For EUROPE
	ZZ3370005	P.W.Board Assembly For EUROPE
J062	YP1000078	Plug For EUROPE
J901	YJ1100014	Jack For EUROPE
J902	YJ1000037	Jack For EUROPE
R901	RT0547314	Resistor, 47KΩ ±5% ¼W For EUROPE
R921	RT0547314	Resistor, 47KΩ ±5% ¼W For EUROPE
0325	337005601	Buffer
0328	51380308P	P.H.T. Screw x 2
0330	54040302A	Spring Washer x 2
0332	62031650W	Lug
0405	YL1201063	Terminal Part of REF, DESIG. No.J058
J058	YL1201063	Terminal
J060	YL1201066	Terminal
0406	51040206E	F.H.M. Screw
0407	53110203E	Nut
0804	317086101	Label
0811	51380308P	P.H.T. Screw x 2 For EUROPE
0401	YL1201066	Terminal Part of REF. DESIG. No. J057 & J060
J057	YL1201066	Terminal x 2
J060	YL1201066	Terminal
0408	62021030W	Lug
0403	YL1101030	Terminal Part of REF. DESIG.No. J059 & J061

REF. DESIG.	PARTS NO.	DESCRIPTION
J059	YL1101030	Terminal
J061	YL1101030	Terminal
0331	138200503	Clampe
J001	YJ0400051	AC Jack For U.S.A. & CANADA
T051	TS1480309	Power Transf., 120V, 50/60Hz For USA & CANADA
1821	337005301	Jack Cover
P800	YD3370004	P.W. Board Power Supply For EUROPE
T052	TS1480310	Power Transf. For EUROPE
J002	YJ0400050	AC Jack For EUROPE
0526	337010703	Sheet VOL.
0529	51060308A	P.H.M. Screw
0530	53110301E	Hexagon Nut
0531	51380308P	P.H.T. Screw
0603	337010703	Sheet Tone
0606	51060308A	P.H.M. Screw
0607	53110301E	Hexagon Nut
0608	51380308P	P.H.T. Screw
0622	333230301	Mask
0723	337010703	Sheet
0730	337010706	Sheet x 2
0812	333210105	Support
0813	53110303E	Hexagon Nut x 2
0814	53110303E	Hexagon Nut
0219	51062605A	P.H.M. Screw x 2
0224	51062605A	P.H.M. Screw x 3
0226	51042606S	F.H.M. Screw x 2
0227	51380310P	P.H.T. Screw x 3
0414	51140305S	O.C.H.M. Screw
0420	51060310S	P.H.M. Screw x 2
0421	51060305S	P.H.M. Screw
0422	51060305S	P.H.M. Screw x 2
0433	333225301	Handle
0502	337015430	Knob x 3 Vol., Tone, Balance
0816	337026506	Indicator Mic., Ext. Sp.
0817	337026507	Indicator
0819	337026509	Indicator, 120V For U.S.A. & CANADA
0820	337026510	Indicator, 220V For EUROPE
0823	51062612S	F.H.M. Screw x 2
2101	951120104	Label For U.S.A.
2102	257886101	Label For U.S.A.
2103	951091102	Label For U.S.A.
2108	257886101	Label For CANADA
2109	951091101	Label For CANADA
·AB01	ZB0102007	Batteries x 4
AY01	ZC0200202	A.C. Cord For U.S.A. & CANADA
AY01	ZC0200307	A.C. Cord For EUROPE
2104	308907102	Cleaner
AJ01	YP0100025	Plug
2009	337083102	Carrying Case For EUROPE
2010	337083101	Carrying Case For U.S.A. & CANADA
2011	337183103	Carrying Case
2013	337085101	Instructions For U.S.A. & CANADA
2014	337085131	Instructions For EUROPE

REF. DESIG.	PARTS NO.	DESCRIPTION
2016	287685103	Instructions For U.S.A. & CANADA
2017	901152501	Polyethy Bag
2018	963000015	Guarantee Card For U.S.A. & CANADA
2019	287681301	Paper Bag For U.S.A. & CANADA
2024	337080101	Packing Case
2025	337080301	Partitioner
2026	337080302	Partitioner
2028	337080501	Master Carton
2030	901284001	Polyethy Bag x 2
2031	901102501	Polyethy Bag
2032	901051001	Polyethy Bag
2033	952281501	Serial No Card x 2

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